proportional to its square, and a factor such as e^{-hE} is required to keep down very high values. The generalisations by Boltzmann and Maxwell to internal degrees of freedom would lead us too far, the aim here proposed being merely concrete illustration of the very general but purely analytical argument that is fully set forth in the treatises of Watson, Burbury and Boltzmann.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. H. Herbert Smith has been appointed Gilbey lecturer in agriculture for the next three years. Prof. Macalister and Dr. Habershon have been appointed additional examiners for medical degrees.

The Walsingham Gold Medal in biology has been awarded to Mr. H. Dale of Trinity College, and the Bronze Medal to Mr. R. C. Punnett of Caius College.

The University of New Brunswick has been affiliated to the University of Cambridge.

The researches submitted to the Board for physics by Mr. J. B. B. Burke, Mr. W. C. Henderson and Mr. A. H. Peake, advanced students, have been approved as qualifying for the B.A. degree.

Dr. Anningson, Dr. Collingridge, Prof. Sims Woodhead and Dr. Tatham have been appointed examiners in sanitary science.

The proposal for enabling the examiners to award a first class to candidates for the Natural Sciences Tripos, Part II., who show a sufficient knowledge of two subjects, but do not quite attain the first class standard in either, has been rejected by the Senate.

THE Childhood Society offers prizes of two guineas and one guinea for the two best essays on some prescribed subjects referring to the mental and physical characteristics of children. Information can be obtained from the Hon. Secretary of the Society, 72 St. Margaret Street, London, W.

GLANCING through the Calendar of the University College at Nottingham, we notice the announcement that the Board of Education is prepared to pay three-fourths of the laboratory fees at the College of Government teachers engaged in science teaching who wish to become familiar with practical methods. This rule applies to other University Colleges.

SCIENTIFIC SERIALS.

American Journal of Science, November.—Elaboration of the fossil cycads in the Yale Museum, by L. F. Ward. The collection contains twenty-nine different species of cycads from the Black Hills, represented by nearly eight hundred specimens. A number of new species are described, and termed respectively Cycadeoidea superba, rhombica, heliochorea, utopiensis, reticulata, minima, and protea.—Chemical composition of turquoise, by S. L. Penfield. Turquoise is so uniform in its chemical constitution that it can hardly be considered an accidental mixture of an aluminium phosphate and a copper phosphate. Copper and iron must be regarded as constituents rather than impurities. The author derives it from ortho-phosphoric acid, in accordance with the formula

$$[Al(OH)_2,Fe(OH)_2,Cu(OH),H]_3PO_4.$$

—Quartz-muscovite rock from Belmont, Nevada, by J. E. Spurr. The rock described occurs in a large dyke just east of Belmont. It occurs in large masses, changing gradually and irregularly into alaskite or muscovite-biotite granite. It is identical with the "beresite" occurring in the Urals in association with veins of auriferous quartz.—Volumetric estimation of copper as the oxalate, with separation from cadmium, arsenic, tin and zinc, by C. A. Peters. The precipitation of copper oxalate from solutions containing at least 0·0128 grammes of the oxide and saturated with oxalic acid is practically complete. Moderate amounts of copper may be determined quantitatively as the oxalate by precipitation with oxalic acid and titration of the precipitate by potassium permanganate. Copper may also be separated from other metals in the presence of nitric acid by the addition of considerable amounts of oxalic acid.—Synopsis of the collections of invertebrate fossils made by the Princeton expedition to Southern Patagonia, by A. E. Ortmann. Thirty-six new species are described, mostly gastropoda.—The kathode stream and X-light, by W. Rollins. The author advances two arguments against the supposition that the kathode stream particles are always of the same size, move with the same speed, and carry the same charge. Mercury particles appear too heavy to generate X-rays, and the loss of material from kathodes of different metals is not the same.

Bollettino della Società Sismologica Italiana, vol. vi., 1900–1901, No. 4.—The great earthquake of June 12, 1897, by R. D. Oldham. A summary of the author's report on the great Indian earthquake, and of his memoir on the propagation of earthquake motion to great distances (*Phil. Trans.*, 1900A, pp. 135–174).—A new protographic seismic pendulum, by G. Costanzi. A description of an apparatus for recording only the first part of the earthquake-motion, the surface on which the record is made being withdrawn from the moving pendulum.—Principal eruptive phenomena in Sicily and the adjacent islands during the year 1899, by S. Arcidiacono.—Notices of earthquakes recorded in Italy (June 5 to August 4, 1899), by A. Cancani, the most important being the Tuscan earthquake of June 27, the Latian earthquake of July 19, and distant earthquakes on June 5, 14, 17, July 7, 11, 12 and 14.

SOCIETIES AND ACADEMIES.

LONDON.

Linnean Society, November 15.—Mr. C. B. Clarke, Vice-President, in the chair.—Mr. W. B. Hemsley, F.R.S., F.L.S., exhibited a number of specimens and drawings of Fitchia (Hook. f. in *Lond. Journ. Bot.* iv. p. 640, pls. 23, 24), including a new species from the island of Raratonga in the Cook Archipelago, discovered by Mr. T. F. Cheeseman. The genus was described from specimens thought to have been procured on Elizabeth Island, a remote coral island in the Eastern Pacific; but Mr. Hemsley gave reasons for believing that the locality of the plant described by Sir Joseph Hooker was Tubnai Island in the same latitude, but 20° further to the west: an island of volcanic origin and mountainous, and, therefore, more likely than a coral island to be the habitat of such a plant, especially as it was originally discovered by Banks and Solander in Tahiti. Only three or four species are known: they are small resiniferous shrubs of tree-like habit, with rather thick branches, opposite simple leaves borne on slender stalks, and terminal, usually solitary flower-heads. Mr. Hemsley next exhibited an abnormal cluster of fruits of the edible chestnut found by Mr. Charles Read of Sway in the New Forest, and forwarded to Kew by the Rev. J. E. Kelsall. Usually there are two or three, rarely four in a cluster; but in the specimen exhibited there were at least fifteen, the largest nuts measuring about an inch in their greatest diameter. He also exhibited a curious flask-shaped bird's nest, which had been sent to Kew by Mr. J. H. Hart, Director of the Botanic Garden, Trinidad, but without any information concerning the bird which built it. It was constructed almost entirely of the soft plumose seeds of a species of Tillandsia (Bromeliaceæ). It measured a foot in length and between four and five inches in its greatest diameter, and had the entrance at the base, the receptacle for the eggs being near the top of the inside. Mr. J. E. Harting, in reply to a question from the chairman, said that without seeing a specimen of the bird which had built the nest in question, it was not easy to name the species with certainty; but that it was doubtless the nest of an Icterus, and probably of *Icterus leucopteryx*, commonly known in the West Indies as the Banana-bird.—Mr. James Groves, on behalf of Mr. Cecil R. P. Andrews, exhibited specimens of a Sea Lavender new to the Channel Islands, *Statice lychnidifolia*, Girard, discovered by Mr. Andrews in August of the present year growing sparingly on low rocks by the sea in Alderney in company with *S. occidentalis*, the most nearly allied British species. Mr. Groves pointed out that the interest of the record consisted, not so much in the fact of the plant occurring in Alderney (being a native of the adjacent French coast, and the Channel Islands being geographically more French than British), as in the fact that a species should be added to the flora of one of our possessions so near home.—Mr. W. C. Worsdell read a paper entitled "Further Observations on the Cycadaceæ," intended to throw additional light on the problem as to the phylogenetic origin and relationships of this group of plants.—On behalf of Miss Alice L. Embleton a paper was read by Prof. G. B. Howes on a new entozoic Copepod (*Goidelia echiura*) found together with an Infusorian (*Trichodina*) in the rectum of a new Japanese marine Worm (*Echiurus unicinctus*) recently described by her in the Society's *Transactions*. This Copepod is eyeless, and a description was given of its appendages in both the adult and metamorphic stages, from careful dissections under the microscope made in one of the laboratories of the Royal College of Science.

Geological Society, November 21.—J. J. H. Teall, F.R.S., President, in the chair.—A Monchiquite from Mount Girnar, Junagarh (Kathiawar), by Dr. J. W. Evans. After a brief account of the rocks of the monchiquite-type, in which ferromagnesian silicates are embedded in an isotropic matrix with the chemical constitution of analcime, the author describes an example from Mount Girnar, where it is associated with a nepheline-syenite intrusive in a mica-augite-diorite. The most striking feature of this rock is the occurrence of colourless spheres of various sizes up to about 1 mm. in diameter. The rest of the rock is mainly composed of a hornblende of the barkevikite-type; a pale green augite is also present.—The geology of Mynydd-y-Garn (Anglesey), by Charles A. Matley. Mynydd-y-Garn, a hill of less than 600 feet elevation, stands above the village of Llanfair-y'nghornwy in north-west Anglesey. The mass of the hill is an inlier of sericitic and chloritic phyllites (Garn Phyllites), surmounted by a massive conglomerate (Garn Conglomerate), and surrounded by black slates and shales of apparently Upper Llandeilo age. The general dip of all the rocks is northerly and north-easterly. The Garn Phyllites are usually green altered shales and fine gritty rocks, and are intensely contorted near their southern boundary. Even where not contorted they show under the microscope evidence of powerful earth-movement. They are considered by the author to be part of the "Green Series" of northern Anglesey. They are cut off to the west and south by a curved fault, probably a thrust, which brings them against Llandeilo slates and breccias. The district around Mynydd-y-Garn has been affected since Llandeilo times by two powerful earth-movements, acting one from the north, the other from the north-east. The first-mentioned prevailed in the area west and north-west of the hill, where the pre-Llandeilo rocks are frequently shattered to crush-conglomerates. Around Mynydd-y-Garn itself and east of it the principal direction of movement has been from the north-east; south of the hill the structure is, perhaps, the result of the interference of these two movements.—On some altered tufaceous rhyolitic rocks from Dufton Pike (Westmorland), by Frank Rutley, with analyses by Philip Holland. The specimens described were collected by the late Prof. Green and Mr. G. J. Goodchild from the Borrowdale volcanic series which constitutes the central mass of Dufton Pike, and the chief interest attaching to them is their alteration, probably as the result of solfataric action.

Anthropological Institute, November 22.—Mr. W. Gowland, Vice-President, in the chair.—A paper was read by Messrs. MacIver and Wilkin on their Algerian journey. The main object of the journey was to investigate the evidence for the Libyan origin of Prof. Flinders Petrie's "New Race." The districts especially investigated were the Aurès mountains, inhabited by the Chawia, and Kabylia; and a large number of lantern slides were secured which were exhibited in illustration of the paper. The manufacture of pottery was described in detail; the readers considered that the identity of one entire class of Kabyle ware with that of prehistoric Egypt in respect of colour, technique, and details of ornament, as well as numerous coincidences of form, proved the close culture connection of the ancestors of the Berbers with prehistoric Egypt. Other classes of pottery seemed to have been directly derived from or communicated to Cyprus. Turning to questions of anthropography, the readers showed that the Berbers are essentially a white race with brown-black hair, brown or hazel eyes and a skin which is really red-white. They are, therefore, the true representatives of the white Libyans of the Egyptian wall-paintings. Blondes occur but seldom; they form not more than 10 per cent. The paper concluded with a summary of the results of an anthropometrical examination of a very large series of prehistoric Egyptian and modern Berber skulls; the results showed the two races to be quite distinct. The expedition has strengthened the case for culture connection between Libya and Egypt, but disproved the theory of common race.

November 27.—Mr. C. A. Read, President, in the chair.—Prof. E. B. Tylor communicated, and commented on, a paper by Mr. Paxton Moir on stone implements in Tasmania. The paper described the sites on which the stones were found and the uses to which the various forms were put. The types included knives and hand axes which were fairly common, and also a certain number of concave "scrapers" and pointed "groovers." There was, however, considerable difference of opinion as to the propriety of using a very definite terminology and attributing to the manufacturers very definite intentions where there was obviously very little command over the materials. Another point which roused some discussion was whether the stones were shaped to fit the hand or selected because they were so shaped, or whether the adaptability of the hand did not account for the readiness with which a "grip" was found.—A large number of Tasmanian implements being on the table, the points raised in the discussion received practical illustrations. There were also exhibited, on behalf of Mr. Alfred Sharpe, C.B., H.B.M. Commissioner of Nyassaland, a double clapperless bell, a stone implement of uncertain use, and a wooden stool supported on a carved female figure with prominent keloid scars, and native head-dress, from Angoniland.

Royal Microscopical Society, November 21.—Mr. Wm. Carruthers, F.R.S., President, in the chair.—Mr. Nelson exhibited and described an erect image dissecting microscope by Leitz, and sent for exhibition by Mr. C. Baker. The erection of the microscopic image, effected by means of Porro prisms, was first described by Ahrens in the *Journal* of the Society in 1888. The instrument was valuable as a dissecting microscope; it was provided with handrests and three objectives, having a very long working distance.—Mr. Disney exhibited a diffraction plate having the lines ruled in concentric circles, by which the diffraction bands were separated with great clearness. The rulings were about 7000 to the inch. He also exhibited a steel brooch the surface of which had been ruled in the same way.—Mr. C. F. Rousselet exhibited an electric lamp for use with the microscope.—The president called attention to the exhibition that evening of a number of slides from the Society's cabinet, prepared by the late Dr. Carpenter in connection with his investigations into the shells of the mollusca. Mr. B. B. Woodward also exhibited some preparations.—Prof. Chas. Stewart referred to the views held upon shell structure at the present day, and, taking the common pinna shell as an example, demonstrated how its structure was built up. Besides studying the sections usually made, he recommended that shells should be broken and the fractured surfaces examined, if a correct idea of the formation of the shells was to be obtained.

Zoological Society, December 4.—Dr. Henry Woodward, F.R.S., Vice-President, in the chair.—The Secretary read an extract from a letter which had been addressed to the Colonial Office by the West India Committee, concerning the proposed introduction of the English starling or the Indian mynah into St. Kitts, West Indies, to check the increase of grasshoppers, which were causing great damage to the growing crops in that island.—Mr. R. Lydekker exhibited, on behalf of Mr. Rowland Ward, and made remarks upon the mounted skin of a female musk-ox which had been obtained from East Greenland.—Dr. C. I. Forsyth Major exhibited and made remarks on some remains of *Cyon* from Sardinia, and of a monkey (*Macacus*, sp. inc.) from Mauritius.—Mr. A. H. Cocks made some remarks on the period of gestation of the pine-marten (*Mustela martes*), which he had ascertained could not be less than ninety-four days and might possibly be as much as 106 days.—Mr. J. S. Budgett read a paper on the breeding-habits of *Protopterus*, *Gymnarchus*, and some other West African fishes, in which an account was given of a collecting trip made during last summer to the swamps of the Gambia River in search of the eggs of *Polypterus*. The eggs of *Polypterus* were not discovered, though a very young specimen, measuring only one inch and a quarter in length, was found. In this small specimen the dermal bones were not developed, and the external gills were of very great size, the base of the shaft being situated immediately behind the spiracle. The dorsal finlets formed a continuous dorsal fin. While Mr. Budgett was in search of the eggs of *Polypterus*, the underground nests of *Protopterus annectens* were found in abundance, and complete series of eggs and larvæ were preserved. The male *Protopterus* was found to live in the nest until the larvæ were fit to leave it. Nests were also found of the curious fish *Gymnarchus niloticus*. These were made in about three feet of water, and floated on the surface. The nest was two feet long and a foot wide; the walls of the nest stood several inches out of the water around two sides and one end. The opposite wall was low, and here was the entrance to the nest. Nests of *Heterotis niloticus*, *Hyperopisus bebe* and *Sarcodaces odoë* were also described.—A series of papers on the collections made during the "Skeat Expedition" to the Malay Peninsula in 1899–1900 was read. Mr. J. Lewis Bonhote reported on the mammals, and enumerated the fifty-four species of which specimens had been obtained. One new species was described as *Mus ciliata*. Mr. N. Annandale gave a short description, illustrated with lantern slides, of the country traversed, and read the notes he had made on the habits and natural surroundings of the insects he had observed. Mr. F. F. Laidlaw gave an account of the frogs collected by himself and Mr. Annandale; they embraced examples of twenty-nine species, of which four, viz. *Rana signata*, *R. Lateralis*, *Bufo jerboa* and *Microhyla inornata*, had not previously been recorded from the Malay Peninsula. The earthworms collected during the expedition were reported upon by Mr. F. E. Beddard, who described from amongst them ten new species belonging to the genus Amyntas.—A communication was read from Dr. Arthur G. Butler containing an account of the butterflies collected by Mr. Richard Crawshay in the Kikuyu Country of British East Africa in the years 1899 and 1900. The species represented in the collection were 116 in number, six of which were described as new in the paper.—Mr. R. Newstead contributed a paper on a new scale-insect (*Walkeriana pertinax*), collected by H.B.M. Commissioner Alfred Sharpe, C.B., at Zomba, British Central Africa, which was stated to be probably the largest species of Coccid yet discovered, the maximum measurements being 20·50 mm. long and 10 mm. high. As in the genus *Callipappus* the abdomen was intus-suscepted, forming a pouch for the reception of the ova and the hatching of the larvæ. 6258 of the latter were taken from the body of a single female.

Edinburgh.

Royal Society, November 19.—Prof. Copeland, Vice-President, in the chair.—The chairman gave the substance of communications from the Scottish Office, Whitehall, and from the Nobel Committee of the Royal Swedish Academy of Sciences, as to the Nobel Foundation.—In a paper on the diurnal range of temperature in the Mediterranean during the summer months, Dr. Buchan gave some important conclusions based on the observations made by the staff of the Austrian ship *Pola*. These had been taken at various depths, and a study of them showed that in water deeper than 100 fathoms a daily change of temperature could be detected to a depth of about 150 feet. Thus averaging from 50 distinct sets of observations, he found that the temperature of the surface waters in the afternoon was greater than the temperature in the morning by 1·5° F., and that this difference gradually diminished with increase of depth, having for example the value 0·3° F. at a depth of 100 feet. That such a depth should be reached by the solar radiation seemed very remarkable, and the process by which the heat was lost during the night seemed to demand a careful consideration of our theories of radiation.—Dr. Alexander Bruce read an elaborate paper on the topography of the gray matter and motor cell in the spinal cord, the results being demonstrated by a series of finely prepared lantern slides.

Paris.

Academy of Sciences, December 3.—M. Maurice Lévy in the chair.—Study of the carbide of samarium, by M. Henri Moissan. A mixture of samarium oxide and carbon, submitted to the temperature of the electric furnace, gives easily a crystallised carbide of the formula SaC_2, comparable with the oxides of lanthanum, cerium, neodymium and praseodymium. This carbide decomposes cold water in a similar manner to the carbides of the alkaline earths, giving a complex mixture of hydrocarbons, rich in acetylene. In this respect samarium behaves more like the ytrrium group and differs from the cerium group of rare earths.—Observations of the comet, 1900 *b* (Borrelly-Brooks) made with the large equatorial of the observatory of Bordeaux, by MM. G. Rayet and A. Feraud. The positions of this comet were measured on nine evenings between September 13 and October 25. On the latter date the comet had still a very faint tail, and the nucleus was slightly elongated.—The changes of solar temperature and the variations of rain in regions surrounding the Indian Ocean, by Sir Norman Lockyer and Dr. W. J. S. Lockyer. A connection is traced between the occurrence of dry and wet seasons and the maximum and minimum temperatures of the sun, as determined by the area of sun spots.—New comparative researches on the products of combustion of different apparatus for lighting, by M. N. Gréhant. The products of combustion from incandescent burners, candles and petroleum lamps were compared, with especial reference to the amount of carbon monoxide produced. The results are best compared by examining the ratio of the volumes of $CO : CO_2$ produced. This ratio was 1 : 655 for the Auer burners, 1 : 1025 for the oil lamps and 1 to 1610 for the candles.—On isothermal surfaces, by M. A. Thybout.—On the minimum of certain integrals, by M. H. Lebesgue.—Geometrography in space, by M. Émile Lemoine.—On the theory of electrocapillary phenomena, by M. Gouy. The author states that the view generally held as to the causes of electrocapillary phenomena, the Helmholtz hypothesis of double layers, is not in accord with experiment. The view is here put forward that forces exist between the mercury and the ions or molecules of the dissolved body which are non-electrical. This leads to the conclusion that there exists in general a triple electric layer, which may, in certain cases, be reduced to a double layer.—Acidimetry of the aldehydes and ketones, by MM. A. Astruc and H. Murco. The behaviour of a large number of fatty and aromatic aldehydes and ketones towards helianthine A, phenolphthalein, and Porrier's blue has been studied. The results are in general accord with the thermochemical data.—On some reactions of substituted anilines, by M. Œchsner de Coninck. An account of the reactions between methyl-, dimethyl-, ethyl-, and diethyl-aniline and copper sulphate, chloride, and acetate, and nickel and cobalt chlorides.—On the presence of an iron thiocarbonate in the water of the Rhone, by M. H. Causse. At certain times of the year the Rhone water possesses the property of restoring the colour to Schiff's reagent. After proving that no aldehyde was present in the water, the reaction was proved to be caused by a thiocarbonate of iron, $FeCO_2S$, which was made synthetically in two or three ways. There appears to be some connection between the amount of this substance present in the Rhone water and the number of cases of typhoid fever in the Rhone valley.—Determination of overheating or under-heating of plaster of Paris in furnaces, by M. L. Périn.—Permeability of the external wall of the marine invertebrate, not only to water but also to salts, by M. R. Quinton. It is shown experimentally in a decisive manner that the external wall of the marine invertebrate is permeable, not only to water, but to such salts as sodium chloride and phosphate. Hence the higher marine invertebrate, although closed anatomically, is osmotically open, and hence resembles the lower marine invertebrate, physiologically and anatomically, in being a colony of marine cells.—A volatile poison, the cutaneous secretion of *Iulus terrestris*, by M. C. Phisalix. During a research on the action of this venom upon guinea-pigs, it was found that the poison was volatile; hence it is probable that the active principle is not an albumenoid material.—The large migratory Acridians of the Old and New World of the genus Schistocera; their changes in colour according to age and season; the physiological *rôle* of pigments; by M. J. Künckel d'Herculais.—On the disease of the carnation produced by *Fusarium Dianthi*, by M. G. Delacroix. The conidia of *Fusarium Dianthi* can be killed in seven hours by the vapour of carbon bisulphide. Ordinary formalin of commerce, diluted with one thousand parts of water, kills the chlamydospores in an hour.—On the simultaneous production of two nitrogen compounds in the crater of Vesuvius, by M. R. V. Matteucci. During the recent eruption, the simultaneous ejection of rocks covered with sal ammoniac and iron nitride was noticed, and these are regarded as being intimately related in their formation.—Remarks by M. Armand Gautier on the preceding paper.—On the tectonic continuity of Tonkin with China, by M. A. Leclère.—Chemical and mineralogical examination of the Lançon meteorite, by M. Stanislas Meunier.—On some therapeutic applications of light, by M. P. Garnault. Light may be utilised with great advantage in a certain number of diseases, and the results obtained are certainly due to its specific action. The cases most successfully treated are muscular and chronic articular rheumatism, various ulcers and chronic catarrh of the nose and ear.

New South Wales.

Royal Society, October 3.—The President, Prof. Liversidge, F.R.S., in the chair.—Marriage and descent among the Australian aborigines, by R. H. Mathews.—On the constituent of peppermint odour occurring in many Eucalyptus oils, part i., by Henry G. Smith. The first Eucalyptus oil was distilled by Dr. White in 1788, at Sydney, and owing to the great resemblance between this oil and that obtained from the peppermint *Mentha piperita*, he named the tree from which he had obtained the oil the "Peppermint Tree." Its botanical name is *Eucalyptus piperita*. Since then many other species of Eucalyptus have been found to have this peppermint odour, and are generally known as "peppermints." The constituent giving this odour has now been isolated. It occurs in greatest amount in the oil obtained from the leaves of *E. dives*, next in that of *E. radiata*, and in fair amount in the oils of several other species.—On the crystalline structure of gold nuggets from Klondyke, Victoria and New Zealand, by Prof. Liversidge, F.R.S. Sections of three nuggets from Klondyke were shown. The crystal faces are comparatively small, and the nuggets have a granular structure, as if built up of separate grains, of one or two millimetres in diameter. They are also more fissured and contain more cavities than usual. The sections of Victorian (Australian) and New Zealand nuggets are also made up of small crystals, and they present numerous small cavities after the removal of the quartz and iron oxide by treatment with hydrofluoric and hydrochloric acids, so that the sections present quite a different appearance to the very compact and largely crystallised nuggets from West Australia.

DIARY OF SOCIETIES.

THURSDAY, December 13.

Royal Society, at 4.30.—On the Spectrum of the More Volatile Gases of Atmospheric Air, which are not Condensed at the Temperature of Liquid Hydrogen. Preliminary Notice: Prof. Liveing, F.R.S., and Prof. Dewar, F.R.S.—Additional Notes on Boulders and other Rock Specimens from the Newlands Diamond Mines, Griqualand West: Prof. Bonney, F.R.S.—The Distribution of Vertebrate Animals in India, Ceylon and Burma: Dr. W. T. Blanford, F.R.S.—Elastic Solids at Rest or in Motion in a Liquid: Dr. Chree, F.R.S.

Mathematical Society, at 5.30.—The Syzygetic Theory of Orthogonal Bivariants: Prof. Elliott, F.R.S.—On Discriminants and Envelopes of Surfaces: R. W. Hudson.—Note on the Inflexions of Curves with Double Points: H. W. Richmond.—On some Properties of Groups of Odd Order, ii.: Prof. Burnside, F.R.S.

Institution of Electrical Engineers, at 8.—Possible continuation of Discussion on Mr. Langdon's paper.——*Time permitting*: Rapid Variations in the Current through the Direct Current Arc: W. Duddell.

Chemical Society, at 8.30.—Rammelsberg Memorial Lecture: Prof. H. A. Miers, F.R.S.

FRIDAY, December 14.

Physical Society (Royal College of Science), at 5.—(1) Electric Inertia; (2) The Effect of Inertia on Electric Currents in a Rotating sphere: Prof. A. Schuster, F.R.S.—Exhibition and Description of a Quartz-Thread Gravity-Balance: Prof. R. Threlfall, F.R.S.—On the Theory of Magnetic Disturbances by Earth Currents: Prof. A. W. Rücker, F.R.S. Notes on the Practical Application of the Theory of Magnetic Disturbances by Earth Currents: Dr. R. T. Glazebrook, F.R.S.—The New Physical Laboratories of the Royal College of Science: Prof. A. W. Rücker, F.R.S.—Exhibition of a Set of Half-Seconds Pendulums: W. Watson.

Royal Astronomical Society, at 8.—On the Connection between Solar Spots and Earth-Magnetic Storms: Rev. W. Sidgreaves.—Watch for the Leonids, 1900, at Markree: F. W. Henkel.—The Diameter of Juno (3), determined with the Micrometer of the 40-inch Refractor of the Yerkes Observatory; with Remarks on some of the other Asteroids: E. E. Barnard.—Observations of the Leonids made at Blackheath, 1900 November 14: E. M. Antoniadi and A. C. D. Crommelin.—The Leonids: Observations at the University Observatory, Oxford: H. H. Turner.—Ephemeris for Physical Observations of Jupiter, 1901: A. C. D. Crommelin.—The System of ζ Herculis: T. Lewis,——*Probable paper*: Observations of Capella as a Double Star with the 28-inch Equatorial of the Royal Observatory, Greenwich; W. H. M. Christie.

Malacological Society, at 8.—Note on *Bensonia* and an apparently undescribed Species, *B. mimela*: W. T. Blanford.—Note on *Bensonia mainwaringi* and *Macrochlamys dalingensis*: W. T. Blanford.—Further Notes on the British Pliocene Non-Marine Mollusca: A. S. Kennard and B. B. Woodward.—The Anatomy of *Beddomea* and the Relationships of *Amphidromus*: Henry A. Pilsbry.

Institution of Mechanical Engineers, at 8.—Power-Gas and Large Gas-Engines for Central Stations: H. A. Humphrey.

SATURDAY, December 15.

Essex Field Club (Essex Museum of Natural History, Stratford), at 6.30.—Notes on the Mollusc *Paludestrina jenkensi*, Smith, in Essex and elsewhere: A. S. Kennard and B. B. Woodward.—Aquatic Autocrats and Fairies (Lecture): Fred. Enock.

MONDAY, December 17.

Society of Arts, at 8.—Electric Oscillations and Electric Waves: Prof. J. A. Fleming, F.R.S.

TUESDAY, December 18.

Zoological Society, at 8.30.—Notes on the Fauna of the White Nile and its Tributaries: Captain Stanley S. Flower.—An Account of a Large Branchiate Polynoid from New Zealand (*Lepidonotus giganteus*, Kirk): W. Malcolm Thomson.—On a New Genus of Flat-fishes from New Zealand: H. M. Kyle.

Institution of Civil Engineers, at 8.—*Papers to be further discussed*: The Signalling on the Waterloo and City Railway; and Note on the Signalling of Outlying Siding Connections: A. W. Szlumper.—Signalling on the Liverpool Overhead Railway: S. B. Cottrell.——*Papers to be read, time permitting*: Glasgow Bridge: B. Hall Blyth.—Railway Bridge over the Fitzroy River, at Rockhampton, Queensland: W. J. Doak.—The Niagara Falls and Clifton Steel Arch Bridge: L. L. Buck.

Royal Statistical Society, at 5.—The Statistical Results of the State Monopoly of Spirits, established in Russia in 1895, and its Influence on the Economic Development and Morality of the Population: Alexis Raffalovich.

Royal Photographic Society, at 8.—Photography in War: H. C. Shelley.

WEDNESDAY, December 19.

Geological Society, at 8.—On the Igneous Rocks associated with the Cambrian Beds of the Malvern Hills: Prof. T. T. Groom.—On the Upper Greensand and Chloritic Marl of Mere and Maiden Bradley in Wiltshire: A. J. Jukes-Browne and John Scanes.

Royal Meteorological Society, at 7.30.—The Seasonal Rainfall of the British Isles: Henry Mellish.—A Review of Past Severe Winters in England, with Deductions therefrom: Albert E. Watson.

Royal Microscopical Society, at 8.—A Demonstration of Lantern Projection in Conjunction with the Microscope: Mr. Barton.

THURSDAY, December 20.

Linnean Society, at 8.—On the Structure and Habits of the *Ammocharidas*: Arnold T. Watson.—The Flora of Vavau, one of the Tonga Islandx: J. H. Burkill.—Warning Colours in Insects: Prof. E. B. Poulton, F.R S.

Institution of Electrical Engineers, at 8.—Lecture on the Electrical Engineers (R.E.) in South Africa: Lieut.-Colonel Crompton.

Chemical Society, at 8.—On the Union of Hydrogen and Chlorine: J. W. Mellor.

FRIDAY, December 21.

Institution of Civil Engineers, at 8.—The Use of Geometrical Methods in investigating Mechanical Problems: C. E. Inglis.

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